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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/727,081	12/02/2003	David J. Coumou	3197-000058	6014
27572	7590	02/24/2005	EXAMINER	
HARNES, DICKEY & PIERCE, P.L.C.			TSAI, CAROL S W	
P.O. BOX 828			ART UNIT	
BLOOMFIELD HILLS, MI 48303			PAPER NUMBER	
			2857	

DATE MAILED: 02/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/727,081	<b>Applicant(s)</b> COUMOU ET AL.	
	<b>Examiner</b> Carol S Tsai	<b>Art Unit</b> 2857	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7-14 is/are rejected.
- 7) ☒ Claim(s) 6 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/22/2004</u> . | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. Regarding claim 1, the phrase "may be" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

### *Claim Rejections - 35 USC § 102*

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1 and 2 are rejected under 35 U.S.C. 102(e) as being anticipated by U. S. Publication 2004/0253921 to Turner.

Turner discloses a radio frequency (RF) metrology system for monitoring output of an RF generator to a load comprising: a sensor component (a transducer package 15

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shown on Fig. 1), the sensor sensing at least one of a voltage (voltage transducer 16 shown on Fig. 1) and current (current transducer 17 shown on Fig. 1) applied to a load (plasma RF load 207 shown on Fig. 13) (see paragraphs 0078-0080); an analysis module component (an analysis and communications package 69 shown on Fig. 1), the analysis module component receiving at least one of a voltage and current sensor signal from the sensor component (see paragraph 0055); wherein one of the sensor component and the analysis module component may be replaced while the other component remains installed and wherein the RF metrology system is recalibrated following replacement of the one component (see paragraphs 0007, 0025, and 0056).

As to claim 2, Turner also discloses the sensor component further comprising a sensor module and a cable, the cable interconnecting the sensor module with the analysis module component (see paragraph 0059).

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 4, 5, 7, 8 and 10-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Turner in view of U. S. Patent No. 5,737,496 to Frye et al.

With respect to claims 4 and 10, Turner discloses a method for replacing components of an RF metrology system for monitoring output of an RF generator to a load comprising the steps of: providing a RF system including a base sensor (a transducer

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package 15 shown on Fig. 1) and a base analysis module (an analysis and communications package 69 shown on Fig. 1); calibrating a base RF metrology system (see paragraph 56); determining a frequency response characteristic of the base sensor (see paragraphs 0058, 0059, 0066, and 0067); determining a response characteristic of the base analysis module (see paragraph 0055); characterizing a frequency response of a group of sensors other than the base sensor (see paragraphs 0079-0081); and determining a set of calibration coefficients (see paragraphs 0072, 0083-0085, and 0093).

Turner does not disclose generating a scaling matrix in accordance with the calibration coefficients.

Frye et al. teach generating a scaling matrix in accordance with the calibration coefficients (see col. 7, line 44 to col. 8, line 11).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Turner's method to include generating a scaling matrix in accordance with the calibration coefficients, as taught by Frye et al., in order to minimize the error between the network output and the target response (see Frye et al., col. 7, line 55).

As to claim 5, Turner also discloses replacing one of the base sensor and the base analysis module with one of a pool sensor and a pool analysis module to define a substitute RF metrology system (see paragraphs 0007, 0025, and 0056).

As to claims 7 and 8, Turner also discloses providing a source of RF power for application of an RF signal to load and utilizing the RF metrology system for measuring application of the RF signal to the load (see paragraphs 0067 and 0078-0082).

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As to claim 11, Turner also discloses characterizing the analysis module (see paragraph 0055).

As to claim 12, Turner also discloses providing a pool of sensors, each sensor of which is characterized for operation with the RF metrology system (see Fig. 13 and paragraph 0079).

As to claim 13, Turner also discloses determining a set of calibration coefficients for the RF metrology system (see paragraph 0056).

As to claim 14, Turner does not disclose generating a scaling matrix to define the RF metrology system.

Frye et al. teach generating a scaling matrix to define the RF metrology system (see col. 7, line 44 to col. 8, line 11).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Turner's method to include generating a scaling matrix to define the RF metrology system, as taught by Frye et al., in order to minimize the error between the network output and the target response (see Frye et al., col. 7, line 55).

8. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Turner in view of U. S. Patent No. 6,449,568 to Gerrish.

As noted above, Turner discloses the claimed invention, except for a plurality of a short circuit impedance, an open circuit impedance, and a 50 ohm impedance.

Gerrish teaches a plurality of a short circuit impedance, an open circuit impedance, and a 50 ohm impedance (see col. 3, lines 32-49 and col. 16, line 66 to col. 17, line 14).

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It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Turner's method to include a plurality of a short circuit impedance, an open circuit impedance, and a 50 ohm impedance, as taught by Gerrish, in order that a precise input level to a known load from an RF calibration source can be applied (see col. 3, lines 39-40).

***Allowable Subject Matter***

9. Claim 3 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

10. Claim 6 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Quon et al. disclose a non-linear test load being provided for calibrating a plasma system.

Jevtic et al. disclose a voltage probe including a transmission line having an inner conductor and an outer conductor.

Parsons discloses an RF power supply system for use with an electrode in a

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plasma reactor system capable of supporting a plasma with a plasma load impedance, wherein the electrode comprises a plurality of electrode segments.

Goodman discloses RF plasma generation systems, methods for operating the systems, methods for calibrating the systems, and calibration apparatus.

Buck discloses probe for monitoring radio frequency voltage and current.

Williams et al. disclose a RF sensor for monitoring voltage, current and phase angle of a RF signal being coupled to a plasma reactor.

Reese et al. disclose a matching circuit for delivering radio frequency electromagnetic energy from a radio frequency power supply to a variable impedance load such as a gas plasma.

### ***Contact Information***

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carol S. W. Tsai whose telephone number is (571) 272-2224. The examiner can normally be reached on Monday-Friday from 8:30 AM to 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on (571) 272-2216. The fax number for TC 2800 is (703) 872-9306. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the TC 2800 receptionist whose telephone number is (571) 272-1585 or (571) 272-2800.

In order to reduce pendency and avoid potential delays, Group 2800 is encouraging FAXing of responses to Office actions directly into the Group at (703) 872-9306. This practice may be used for filing papers not requiring a fee. It may also be



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used for filing papers which require a fee by applicants who authorize charges to a PTO deposit account. Please identify the examiner and art unit at the top of your cover sheet.

Papers submitted via FAX into Group 2800 will be promptly forwarded to the examiner.

A handwritten signature in black ink, appearing to read "Carol S. W. Tsai". The signature is fluid and cursive, with the first name "Carol" being the most prominent.

Carol S. W. Tsai  
Patent Examiner  
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02/08/05